

CONTROLLED SURFACE-CHEMICAL GRADIENTS

ABSTRACT OF THE DISCLOSURE

A simple and reproducible preparative method for the fabrication of surface-chemical gradients is described herein. Surface-chemical gradient films are prepared by using a liquid front in relative motion to the substrate (e.g. immersion by a linear-motion drive or the use of a spreading droplet) to gradually expose substrate samples to very dilute solutions of adsorbates. As demonstrated by XPS, the self-assembled monolayer gradients produced in this way display a high packing density. This method can be used in the preparation of other gradients of various chemical or biochemical functionalities in one or two dimensions. Such gradients can be used in a wide variety of applications in such diverse areas as cell motility studies, nanotribology research, and high-throughput screening.